



Real-world interface suits any computer

Sydney firm Meyertronix now has available a computer input/output unit suitable for use with any Z80-based computer system. The unit, available either as a kit or fully assembled, provides eight digital inputs, eight outputs to relays and a single programmable analog voltage output.

The unit we have seen came complete with cables and connectors for the VZ-200 computer, but interfacing requires only the connection of four address lines, the data bus and the Z80 control signals IORQ, RD and WR, making it suitable for the ZX81, MicroBee and Super 80 computers, among others. A version is also available for the Commodore 64 and VIC 20 computers.

If more than eight inputs and outputs are required, up to five boards can be connected in parallel, using a special cable arrangement.

The unit is supplied in an ABS plastic case measuring 196 x 158 x 64mm. The main circuit board measures 170 x 133mm and is double-sided with plated-through holes. Eight ICs are used, with data and address line connections to and from the board made by DIP header sockets. The VZ-200 version also comes with a smaller PCB terminated in a 30-way edge connector suited to the peripheral interface of the computer. Power for the circuitry is provided from the computer itself.

Address decoding is performed on-board, with three locations allocated — one each for the eight bit input and output ports and a separate port for the analog voltage output. The decoding is hard-wired, so that the port addressing cannot easily be changed. In the Z80 version the input port is at location 80 hex (128 decimal), the relay output port at 81 (hex) and the analog output port at 82 hex.

The method of producing the analog voltage is interesting. One eight bit output port is dedicated to this function and drives a set of eight analog switches. These switches in turn connect one or more resistors in series with the ADJ input of an LM317 adjustable voltage regulator.

Sending a binary code to the output port thus produces a voltage which is adjustable between 1.2V (the minimum output of the LM317) and the maximum input voltage to the regulator (which can be up to 30V if required). Provided that the resistors in the controlling network are selected for precise values, the output is programmable in 256 equal steps.

Programming the controller is simple as the Basic statements OUT and INP do all the work (PEEK and POKE for the Commodore machines). Some trial and error would be required to develop a program capable of close control of the analog voltage output as the relationship between data values and output voltages depends naturally enough on the maximum value of the voltage input to the LM317.

The eight input lines are unlatched and

Emona MIC-504 business computer

Emona Computers Pty Ltd has introduced the MIC-504 business computer, a Z80A-based system business system which comes with a range of software.

The MIC-504 is manufactured by Multitech, a Taiwan company which has made a name for itself with the world's most advanced Chinese-language computer and the MicroProfessor range of educational and hobbyist systems.

Specifications of the MIC-504 include CP/M 2.2 operating system, two built-in 14cm double-sided, double density disk drives providing 2 megabytes of storage, and 64K of RAM. Two RS-232C serial ports and a Centronics type parallel printer port are also provided.

Further information on the MIC-504 and a range of other computer systems and peripherals is available from Emona Computers Pty Ltd, PO Box K720, Haymarket, NSW, 2000.

are normally held high by pull-up resistors. Pushbuttons, reed switches or more complex sensors are easily connected and must be arranged so that they pull the appropriate input line to ground when operated. Reading the status of the switches is simply a matter of performing an INP or PEEK statement.

The second output port controls relays which are claimed to be suitable for switching 240VAC at up to 2A. Unfortunately the provision for connecting to the relays is rudimentary, consisting of a terminal block mounted on the PCB inside the case of the unit. The user must supply and run cables to the terminal block, which would require cutting access holes in the case.

The relays are operated by binary codes which of course are represented by decimal values in Basic, but the scheme is easy to use.

Documentation for the unit consists of seven pages of description, construction and application notes, some example software, circuit diagram and PCB overlay. Cost of the unit in kit form is \$98, and fully assembled and tested versions are available for \$158.

Meyertronix also has available an industrial version of the controller, again designed to interface with any computer system. This version is supplied in modular form in a 19" rack mount